NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

A PERFORMANCE BASED MANAGEMENT SYSTEM

FOR

THE UNITED STATES NAVY

by

George Michael Yacus

June 1984

Thesis Advisor: Thomas G. Swenson

Approved for public release; distribution unlimited

NAVAL POSTGRADUATE SCHOOL
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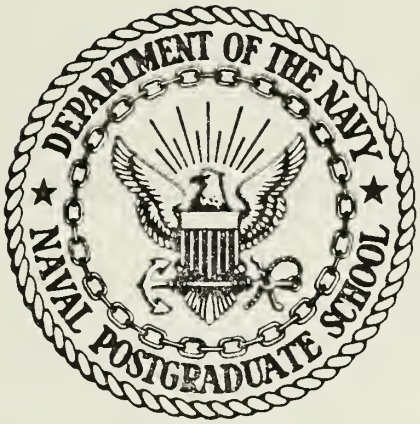

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This thesis discusses performance based management, a system that manages and compensates on the basis of both leadership and technical performance. Present military manpower systems attempt to combine these two dimensions into a one-dimensional system, but this approach has been met with increased dissatisfaction by lawmakers. The U.S. Army has originated a concept paper describing performance based management issues, and has also developed a computer model that reflects changes in costs and

force structure when a performance based system is compared with the current system. The author discusses the concept of performance based management, the computer model, significant issues, and the possible implementation of a performance based management system for the United States Navy.

A Performance Based Management System for The United States Navy

by

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Lieutenant Commander, United States Navy
B.S., United States Naval Academy, 1974

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requirements for the degree of

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ABSTRACT

This thesis discusses performance based management, a system that manages and compensates on the basis of both leadership and technical performance. Present military manpower systems attempt to combine these two dimensions into a one-dimensional system, but this approach has been met with increased dissatisfaction by lawmakers. The U.S. Army has originated a concept paper describing performance based management issues, and has also developed a computer model that reflects changes in costs and force structure when a performance based system is compared with the current system. The author discusses the concept of performance based management, the computer model, significant issues, and the possible implementation of a performance based management system for the United States Navy.

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I. INTRODUCTION

A. BACKGROUND

The concept of paying employees what they are "worth" is a concept that goes back to the very first employee. Since then, compensation for services has been analyzed from every angle by everyone from employers to economists. Determining the amount of compensation can be difficult. Conventional employers (such as manufacturers and service-related producers) usually have the luxury of being able to calculate what a worker contributes to the firm. This is known as value of the marginal product, or VMP. VMP is equal to the marginal product of the worker, MP, multiplied by the cost (or price P) of the worker. The textbook equation

$$VMP = MP \times P$$

is fairly straightforward, and in a profit-oriented business, the productivity of most production workers can be fairly well estimated. The application of human capital theory to the firm is fairly clear cut, for most of the variables share the common denominator of monetary units (dollars).

The problem of determining the correct amount of compensation for members of a military organization poses a much more difficult and complicated problem, and narrowing this down to a dollar figure is not an easy task. The military system does not have the luxury of being able to calculate the value of each member's contribution into dollars, for the end product of the military organization is readiness. Most military occupational specialties (MOS's), or ratings, do not have a corresponding civilian counterpart, and

therefore the final product (readiness) cannot be translated into dollars using this method of comparison. Some military occupational specialties/ratings do closely correspond with certain civilian occupations, but even so, the military responsibilities and duties unique to the person in the service usually do not correspond to those in the civilian sector, and thus we are back to the classic problem of trying to compare "apples with oranges."

The military system works with an implicitly defined two-dimensional workforce...the structure consists of both leadership/experience (paygrades E-1 to O-10) and technical expertise (pilot, technician, etc.). In the past, the integration of these two dimensions was not necessarily critical. The paygrade and its leadership responsibilities almost always had precedence over the serviceman's technical capabilities and expertise. As the complexity of the military service increased and the competition for technicians with the private sector heightened, a more economic approach needed to be taken to ensure that leadership as well as technical requirements were met.

B. FORCE COMPETENCY...(WHO)

Finding an opponent among our nation's lawmakers to the idea of maintaining a military force that was competent to do the job would be difficult. When the caveat of achieving this force through the allocation of competing scarce resources is added, however, the definition of "competent" becomes negotiable and the staunch support for the original idea starts to waver. The concern for obtaining "more bang for the buck" is the focal point of the competition for dollars, so our "competent force" must be efficient if it is to be funded. Likewise, each dollar spent on our military "employees" must also reflect that he is effective and can carry out his mission successfully.

The problems that we have discussed thus far (compensation being linked to performance, integration of leadership and technical performance, efficiency and effectiveness of military manpower dollars, and how these relate to the final structure and capability of the force), are factors that cause military manpower planners to focus their attention on the concept of force competency. In December of 1982, the U.S. Army Soldier Support Center was tasked to develop and implement a performance-based military occupational specialty structure that based compensation on both leadership competence and technical competence [Ref. 1]. It is this idea...performance-based (two-dimensional) management...that is the primary topic of this thesis. This author intends to closely examine the concept and its ramifications and then to investigate the applicability to the United States Navy.

C. USEFULNESS...(WHY)

There are many advantages in using this approach that are reasonably evident. Besides those already discussed, such a system could potentially improve the competency of the force, establish standards (criteria) that would have to be met before giving increases in compensation (such as bonuses), modify the present "up-or-out" strategy resulting in a more senior career force, reduce accession and training costs (due to better retention), cause a more accurate determination of manpower requirements (including quality as well as quantity), and a host of other advantages that will be discussed in the thesis.

D. CURRENT PROGRAM STATUS...(HOW)

The U.S. Army's pilot program on performance-based competency is well underway. Research has been conducted, milestones and responsibilities have been established, and feasibility models have been constructed. One of the most significant accomplishments thus far has been the creation of the Performance Based Compensation Analysis Model, developed by Robert A. Butler and Oliver L. Frankel of The Assessment Group, a private contractor in Santa Monica, California [Ref. 2]. This model predicts force structure and size changes based on pay and promotion rules of a two-dimensional (leadership/technical) system. It is a steady-state model that describes costs and force structures with the ability to change several parameters to predict possible outcomes. Steady-state is an appropriate method for evaluation, for it provides the user with an eventual outcome of the system that reflects long range results. It will be described in detail, and application to U.S. Navy force structure will also be discussed.

E. STRUCTURE OF THESIS

This introduction (CHAPTER ONE) is meant to encapsulate and preview material to be covered in detail later in the thesis. CHAPTER TWO deals with the description and the basic structure of a proposed Performance-Based Management System (PBMS) and the previously mentioned Performance-Based Compensation Analysis Model (PBCAM). CHAPTER THREE will analyze the system and discuss some of the current problems as well as the status of the proposed U.S. Army program. CHAPTER FOUR will examine what progress has already been made and try to examine the U.S. Navy application.

Time and resources have not permitted the use of U.S. Navy data to project force levels and costs, so therefore the author intends to outline a "recipe" that will direct the steps to be taken to accomplish an in-depth analysis of the concept at a future time. CHAPTER FIVE looks at modifications to the system (i.e. bonuses vs. professional pay) and future prospects and directions that the system may take. CHAPTER SIX (CONCLUSIONS) briefly summarizes the thesis and presents the author's recommendations. Finally, supporting references and appendices can be found at the end of the thesis.

F. PURPOSE OF THESIS

The thesis has two primary objectives:

1) Presentation of the material in an understandable form.

2) Analysis of performance-based management in the USN.

The first objective is of greatest concern to the author, for the material presented has reasonable merit and potential if it can be conveyed to policymakers. The author is committed to writing this thesis in an understandable, non-technical format. Anacronyms have been avoided when possible, and the text is simplified, hopefully helping to meet the first objective. The second objective is contained in the thesis, which the reader will hopefully enjoy and find of interest.

II. THE CONCEPT OF TWO DIMENSIONAL PERFORMANCE-BASED MANAGEMENT

A. OVERVIEW

Article I Section VIII of the United States Constitution authorizes the U.S. Congress the following powers:

> "The congress shall have the power to
> ... provide for the common defence and general welfare of the United States;
> ....To raise and support armies...;
> ....To provide and maintain a navy;
> ....To make rules for the government and regulation of the land and naval forces;
> ....To provide for organizing, arming, and disciplining, the militia, and for governing such part of them as may be employed in the service of the United States..."
> [Ref. 3]

Since the United States of America was established, these responsibilities have been carried out by our nation's lawmakers. The structure and size of our armed forces have changed dramatically since the time of the founding fathers, but the annual task of reviewing and determining the composition and budget of our nation's military forces continues.

B. MILITARY MANPOWER REQUIREMENTS

A good way to acquire an overall view of current trends in the size, structure, and mission of the Department of Defense is to read the Annual Report to the Congress given by the Secretary of Defense each fiscal year [Ref. 4]. In reading the report, there is an overall statement of purpose and strategy which is used as a basis for budgeting resources. Two particular sections stand out in the FY 1984 report:

"The President's FY 1984 defense budget reflects our continued commitment to maintaining and enhancing the current operating forces of the military and ensuring this Nation's future security. It has been developed based on an honest and realistic reassessment of our existing and long-term military capabilities in the face of a growing threat. The costs are stated clearly. It is economically productive and provides for a controlled growth rate.... The achievement and maintenance of improved levels of readiness and sustainability continue to receive a high priority. Force modernization and expansion programs are planned to meet the ever present and growing Soviet challenge." [Ref. 4]

The next quotation helps to demonstrate the portion of the budget that our defense manpower planners are concerned with:

"Operating costs represent about 52% of the DoD budget in FY 1984. This category includes our payments to military and civilian personnel and military retirees as well as allocations for maintenance and repair of equipment and for utilities, medical costs, training, petroleum and lubricants, and spare parts." [Ref. 4]

The planning, programming, and budgeting tasks act as a method for ultimate formulation of a defense budget reflecting desired force levels. This budget is eventually submitted to Congress for consideration, which authorizes and finally appropriates the funds necessary for the the DoD to implement its programs.

Once the requirements for force levels have been established, authorized, and funded, the next difficult phase begins. The individual services in the Department of Defense are charged with recruiting young men and women from the civil sector, indoctrinating and training them, and then finally distributing them in appropriate quantity and quality. This entire process is to be accomplished at minimum cost, and once the personnel are in place, the next task is to maintain them in adequate numbers and skill so that the nation is ready to defend itself against any threat and to carry out its ever changing national policies.

There is very little that is static in this manpower system. The size and composition of the force is continually changing. Increasing technological demand includes factors such as an increased number of data systems, increased (and more complex) maintenance for sophisticated hardware, and more complex manned (as well as robotic) systems that require increased operator skill. Manning this force with strictly the correct numbers of people is not adequate...quality is an equal counterpart.

To achieve a force with the correct quantity/quality mix (in our constrained system of a democratic republic that utilizes an all-volunteer force), a key required ingredient for success is compensation. There are three basic reasons why we offer people compensation:

1) Acquisition
2) Retention
3) Performance

Each one of these areas has both quantity and quality requirements that must be satisfied. Therefore, in order to meet force requirements, we must attract the service person, pay him enough to stay on the job, and if level of performance is important, we must pay slightly more (due to training, retention in the military sector, and maintenance of proficiency). This does not vary greatly from the civil sector, but there are some unique demands that are placed on service personnel that are not found in the civil sector. The following figure demonstrates some policy tradeoffs:

POLICY VARIABLES	ENVIRONMENTAL	FIXED VARIABLES
Recruiting	Economy	End strengths
Selection	Demographics	Budget
Training	Legal constraints	Force requirements
Evaluation		
Compensation		

Figure 2.1 Relationships of Policy Variables to Other Factors.

Policy can be changed and modified in order to meet overall requirements, and compensation is one of the variables that is most often adjusted to meet requirements. In our military system of the 1980's, the services are still having difficulty in successfully linking performance with compensation.

This is a vital link in satisfying military manpower requirements that are performance related, and a link that would be much more evident and strengthened with the implementation of a performance-based management system.

C. MILITARY ENVIRONMENTAL FACTORS

The present military structure of the United States Armed Forces exhibits a relatively traditional system that has been added to and modified to meet changing requirements. Disregarding the unique characteristics of each individual service component, one sees several basic divisions. The most obvious is the enlisted component and the officer component, resembling labor and management in the civil sector. Entry into each sector is largely dependent on the amount of education of the entrant. Promotion from the lower hierarchy to the upper hierarchy is limited, and entry from the civil sector into the military (lateral

entry), with a few exceptions, originates at the bottom of each respective hierarchy.

Another division in the system is that of technical skills and general skills. There are special communities, corps, and specialties where there is differentiated compensation for the same paygrade. There is nothing uniform about people in uniform...the equation of an E-4 being equivalent to another E-4 is rarely true. For example, an E-4 avionics technician in a flying status with several dependents living in a high cost area will be making thousands of dollars more per year than a single E-4 boatswain's mate that lives on board a ship (due to differences in compensation based on years of service, dependents, training, specialty skills, promotion rates, etc.).

There are dozens of personnel/human resource management texts that deal with different models and theories of the basic problem of matching the individual with the job. Each text will usually mention external influences such as existing laws and regulations, characteristics of the economy, social environment, the manpower pool, and other external factors (these will be covered throughout the thesis). Each text will then focus on the matching of individuals to jobs [Ref. 5]. The degree or measurement to which this match is successful is measurable by factors like attraction, performance, retention, attendance, satisfaction, and other criteria. Support activities performed to accomplish this person-to job match include measurement of employee ability (testing), job analysis, training, rewards and motivation of employees, measurement of performance on the job, and personnel planning. Functional activities include recruiting, testing, selection, training, career management, and employee development. Other key functional activities include compensation, work environment, and areas relating to non-pecuniary aspects of the job. This basic

description is applicable to both civil and military sectors.

As a recruit enters a military or civilian system, he encounters almost all of the processes mentioned in the preceding paragraph to some degree. He is recruited, tested, selected, and placed in a training program that teaches the requirements of a specific job. During his tenure, he is motivated, compensated, developed, and promoted in accordance with a master personnel plan. His success is constantly measured through the previously mentioned criteria (performance evaluation, job satisfaction, attendance, etc.) until his ultimate separation or retirement.

There are organizational characteristics that are peculiar to our present military system that are worthy of mention here. Military employees are bound by a contract (federally enforced). They are competing in an up-or-out system where lack of advancement results in discharge, thus being somewhat contrary to the "peter principle," where one reaches a level higher than their capability [Ref. 6]. The military system is basically an internal labor market, where desirable characteristics developed by training and experience are not usually obtainable from other sources. The military must staff all of its more senior billets internally. The military employer also invests a significant amount of money into human capital-intensive training. The job consists of many military as well as technical aspects, and there is a different set of laws and regulations governing employment. Promotions and job requirements are governed by an (enlisted) personnel management system (EPMS). Although some of these characteristics can be found in certain civilian occupations, all are unique to military service. There are other unique aspects of military life that have not been mentioned, such as risk, quality of life,

and working environment, but what has been mentioned is adequate for a basic description of the military system and its environment.

D. CIVILIAN ENVIRONMENTAL FACTORS

The system of matching people to jobs in the civil sector has already been discussed. There are, however, significant social, economic, and demographic factors that directly affect the personnel process in today's society.

1. Changing Manpower Supply

Due to the post World War II "baby boom" the U.S. male population average age is increasing. Lower birth rates following the "baby boom" have resulted in a declining cohort of 18 year old males [Ref. 7].

2. High-technology

The shift to higher technology weapons systems has created a need for employees with adequate education, and competition between the military and civil sector to accede these quality individuals has stiffened. The military demand for these individuals has increased due to higher organizational and equipment requirements.

3. Growth

The post-recession economy of 1984 has lowered unemployment and has caused concern that the recruiting market will soon be unable to supply the military at required force levels. Additional expansion of the military (increased end-strengths and growth) has exacerbated the problem [Ref. 8].

4. Attitude towards Military

Although the attitudes of youth towards military service have been steadily improving, certain aspects of military life (risk, uncertainty of benefits, commitment) still are unappealing to many [Ref. 9].

A summary of the civilian and military environment as well as the responsibilities of the Department of Defense has just been presented. Although this information may not seem pertinent and may appear to be all-inclusive, each factor presented has some bearing upon the revision of the present system and reflects the interdependencies of dynamic personnel systems. Failure to consider these factors could have detrimental results. The next major section gets to the heart of the matter...a description of Performance Based Management.

E. PERFORMANCE BASED MANAGEMENT

1. Description

The objective of performance-based management for the military is to man the force "...through attainment of a competency based, quality force with a higher career content...The new approach would provide two dimensions to success: leadership potential and technical competence..." [Ref. 1] A key ingredient is the tie between compensation and performance. For levels of increased technical competence (or leadership potential), increased compensation would be awarded. This compensation was originally intended to be awarded in the form of professional pay, but the possibility of integrating the current system of bonuses should not be ruled out.

A diagram of the proposed system can be found in figure 2.2 (following page). The vertical axis denotes the amount of leadership skill of the service member and corresponds to current enlisted paygrades. The horizontal axis represents the degree of technical proficiency (in some occupational specialty), with movement to the right indicating increased technical proficiency. Any upward or rightward horizontal movement would result in increased compensation. Leadership progression would be represented by upward movement, and technical progression by rightward horizontal movement. The concept of vectoring means the degree and direction that a person would move during his career...hopefully upward and to the right. Leadership and technical progression would be certified using special testing and other criteria.

F. RESTRICTIONS AND GROUND RULES

Development of the performance based management system was primarily accomplished by the U.S. Army Soldier Support Center at Fort Benjamin Harrison, Indiana, in 1982. It was tasked by the U.S. Army Training and Doctrine command under the cognizance of U.S. Army Deputy Chief of Staff for Personnel to develop a concept that would identify, develop, execute, and evaluate a pilot program that would demonstrate the feasibility of a system that recognized competence in two dimensions. There were several ground rules and restrictions placed on the designers. The system had to conform to existing legal authority; it was to include combat arms, combat support, and combat service forces; it was to consider the use of competency level technical certification as a performance based criteria for promotion; it was to also consider legislative changes that would be necessary to implement a pilot program.

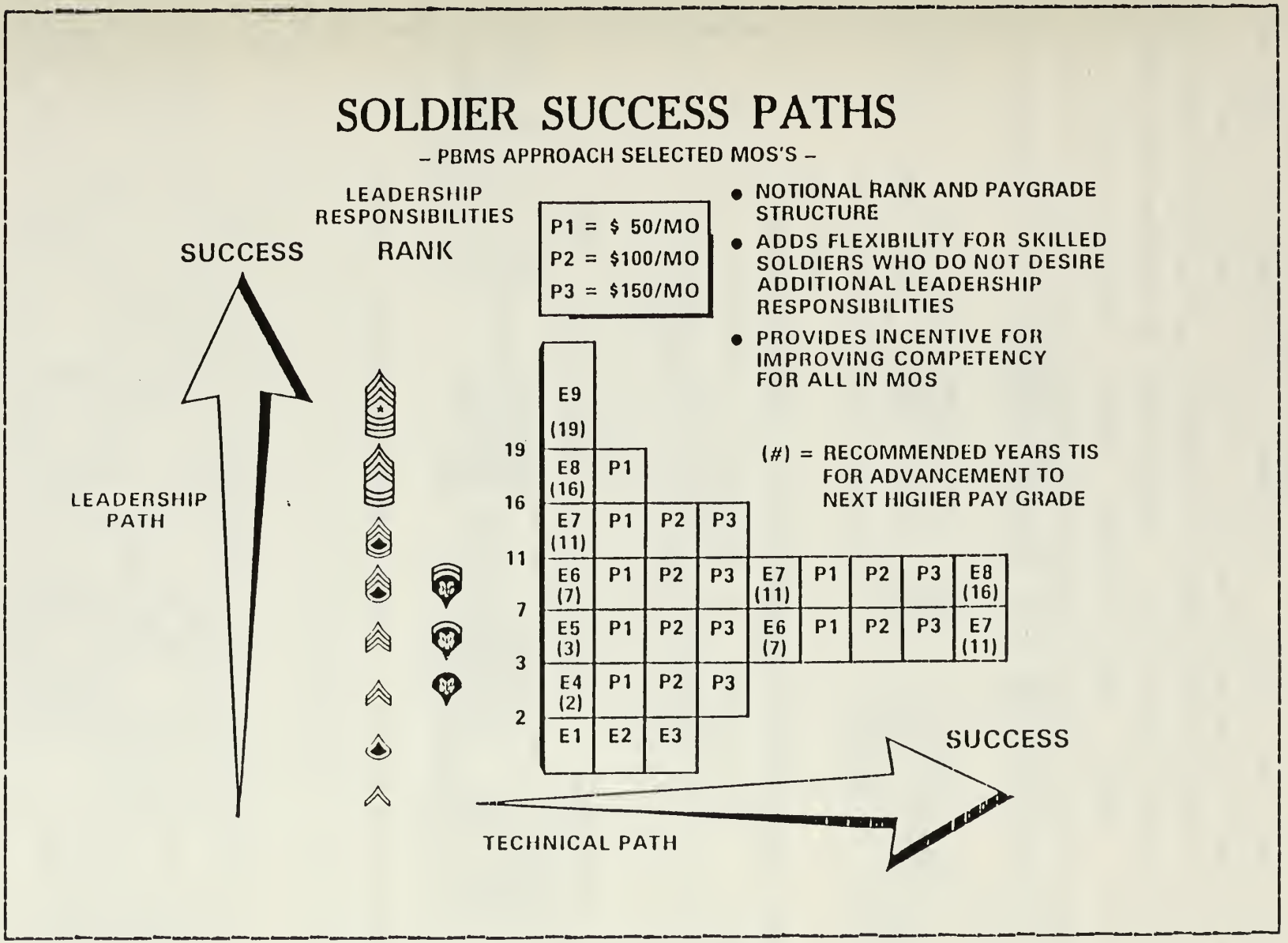


Figure 2.2 Soldier Success Paths.

Various working groups were briefed on the idea and solicited for input, and their considerations will be mentioned in the next chapter. Some of the key considerations included cost-benefit analysis, training resources and certification standards, development of choice (decision) points where a soldier could track either vertically or horizontally, the justification of current force structure, and examination of the concept's harmony with established goals.

The original study was based on five Military Occupational Specialties (MOS), which are shown in the following table:

TABLE I

PBMS U.S.Army MOS Description

FUNCTION	UNIT	MOS	DESCRIPTION
Combat	Tank Co.	19D(E/K)	M60 Tank Crewman
Cmbt Spt	Signal	35K(L/M/P/R)	Avionic Mech
Cmbt Spt	Transportation	68J(66J)	Fire Cntrl Mech
Cmbt Spt	Intelligence	33S(R/T)	EW Intercept Rpr
Cbt Srv Spt	Medical	91P	X-ray Spec

Additionally, the system had to be appealing to the force. It was supposed to be "evolutionary" instead of "revolutionary." It was not supposed to replace the Enlisted Personnel Management System (EPMS), but only to modify it. Senior enlisted (as well as senior officers) would have to accept the system, so it couldn't be too radical. Middle management would have to support it, and it had to be simple enough to explain and manage.

G. POTENTIAL ADVANTAGES OF PBMS

The following is a brief list of key reasons and explanations why the two dimensional performance-based system could be advantageous:

(1). Evolutionary, not revolutionary. It is not uprooting the existing system, but merely fine-tuning it.

(2). Definition of requirements. Implementation of the system will force the users to specify exactly what quantity/quality manpower is required. It is customer oriented.

(3). Up-or-in. Good technicians that may have low leadership potential would not be forced out. This manpower saving could potentially result in dollar savings. For example, a technician retiring after 30 years of service as an E-5 might not be uncommon.

(4). Compensation flexibility. Compensation could be paid as monthly professional pay, annual professional pay, a selective reenlistment bonus, or paid in other increments which were based on performance, competency, and proficiency.

(5). Return on human capital. Technicians that are retained would contribute resources in return for the dollars spent on training them, thus demonstrating the efficiency principle of compensation.

(6). Lower accessions. Higher retention of trained personnel could result in fewer personnel to be trained at the front end of the training pipeline. This would be especially significant in a booming economy with a declining cohort. This would also result in reduced recruiting costs and a smaller recruiting force.

(7). Appeal to new retirement system. Current dissatisfaction over a young and inexperienced force and early retirement could be eased by using PBMS, for a more career-oriented force would result. Technicians might be more willing to remain for thirty years.

(8). Less training money wasted on attrites. With a lower number of accessions, less money would be spent on those personnel that eventually attrite.

(9). Easier lateral entry. Being more economically in harmony with the civil sector and having specific qualification requirements would greatly reduce the difficulties in acquiring already-trained technicians from the civil sector.

(10). Scientific advancement process. PBMS could reduce the uncertainty of promotion, for requirements would be more clearly defined. Morale would improve because non-selectees would know exactly why they weren't promoted.

(11). Objective measures of performance. Quantifiable performance, such as knowledge level, accuracy, proficiency, and other skills measured by practical, hands-on testing.

(12). Reward tied to desired performance. Rather than throwing a broad blanket of money to a large group hoping to reward only a deserving percentage of the group, payment would be made only to those deserving. We would not be "rewarding A and hoping for B," which is a partial problem of the selective reenlistment bonus program.

(13). Optimization of talent/money. Using the proper programming, manpower dollars spent on talent will be closer to a point of optimality, again promoting efficiency and better return on investment.

(14). Lateral mobility. Instead of graduating a technician out of his job into a supervisory position, he can opt for continuing his technical career without economic punishment.

(15). Adjustable policy gates. Promotion requirements, decision flow points, and other policies can be adjusted to fit requirements.

(16). No overcrowded specialties. Policy adjustments can tailor the personnel to the need. Better morale due to better promotional and financial rewards.

(17). Accession benefit. A well-defined system with good compensation will attract applicants to military service. No need to depend on politically unstable benefits (GI Bill, commissaries, retirement) to draw people into the service.

(18). Morale. Reward for good performance and lack of it for poor performance will definitely boost morale.

(19). Improved testing. Increased emphasis on tests (including hands-on, non-paper-and-pencil tests) could result in better validity and reliability in testing.

(20). Manpower planning. Computers in a management information system using PBMS will allow better manpower planning. Specific job requirements and characteristics will make integration of personnel with hardware easier.

H. POTENTIAL DISADVANTAGES OF PBMS

Performance based management is not without potential disadvantages:

(1). Status-quo is easier. There is always reluctance to change, and some sub-groups of the present force may demonstrate significant reluctance.

(2). Unequal pay. Paying more for technicians might be perceived as being unfair. The importance of leadership skill will appear to be de-emphasized, and there may be some hostility between members of the same leader level

due to a large disparity in pay between technicians and non-technicians (for example, two E-7's from different communities).

(3). Potential cost. The system will initially cost more due to implementation, some increased compensation, and testing (as well as other costs). During a period of fiscal restraint and large deficits, implementing such a system could be difficult.

(4). Risk. Although computer models and analysts appear to be correct, what if they are not? The military manpower system is delicate and the consequences of modifying a successful system could be dangerous. Perhaps if it isn't "broken" it shouldn't be "fixed".

(5). Testing costs. Significant work (and cost) lies in the development of proficiency tests and job analysis.

(6). Increased retirement costs. A career force will result in a larger retired population. With more personnel under the retirement system, PBMS could appear an unattractive alternative.

(7). Dead wood. An older force could result in lower productivity and less promotional opportunity.

(8). Measuring performance. Can performance really be measured? Is it quantifiable?

(9). Optimization. Regulating policy to afford the best mix of costs/talent could prove to be a nightmare. Can the optimization problem be mathematically solved?

(10). Confusing system. The education of two million service members concerning a complex new system (and winning their approval) is a large obstacle.

(11). Constant policy adjustment. Adjusting policy constantly to fit requirements may cause dissatisfaction and demonstrate inconsistency.

These are the potential disadvantages and advantages of incorporating a two-dimensional performance based management system into the U.S. military forces. The next chapter will discuss the U.S. Army's implementation status of PBMS thus far and talk about some of the problems already discussed.

III. IMPLEMENTATION OF THE PBMS CONCEPT

Performance based management in the armed forces is not just a theory...the ground work for program implementation is currently being performed. There are several major hurdles to overcome before the system is fully implemented, and this chapter hopes to discuss program implementation as well as the problems that are faced. Besides milestone plans and funding considerations, computer models that lie at the heart of the program will be discussed (this includes models that are in various stages of development as well as existing models).

A. IMPLEMENTATION

In the short life of PBMS thus far, it has done a lot of travelling and been subject to much scrutiny. Proponents of the program have explained the concept to all levels of Army management and have listened to recommendations and potential pitfalls, making the necessary modifications. The evolutionary process towards better force management continues, and presently there is high interest by Congress and the executive branch (largely driven by fiscal constraints) in achieving the same goals that the PBMS program will hopefully achieve. The environment, therefore, is providing a climate that will aid in the success of PBMS. Thus far, all indications show that the PBMS pilot program in the Army will become a reality.

1. U.S. Army Milestones

The original program milestones for the Army were identified into four phases (and can also be found in Appendix C):

PHASE I	FY 1983	Pilot program resourcing and development
PHASE II	FY 1984-87	Pilot program execution and evaluation
PHASE III	FY 1984-87	Analysis and development for Army-wide implementation
PHASE IV	FY 1988-90	Prioritized Army-wide implementation

Figure 3.1 U.S. Army PBMS Milestones.

2. Funding

When trying to implement any new program, funding is usually one of the first and foremost issues. The amount of expense for research, development, and major change to a system such as PBMS is incredible (although cost savings could very well justify the expense). Prior to February of 1984, approximately $150,000 had already been spent on program development, and an additional two-million dollars may conceivably be programmed prior to FY 1988 [Ref. 10]. This two-million dollar program will accrue significantly higher costs upon full-scale implementation (and at this point we're talking about REAL money). Although these costs may very well be justified, all of the services should

understand the start-up costs of the system. The other services should be watching the program carefully, for many of the pitfalls can be identified from the Army's groundwork. Pilot program implementation, however, is probably the only accurate method of establishing realistic windows of cost. Prior and expected PBMS funding levels can be found in Appendix E.

3. Development

Development of milestones and a pilot program appears to have been quite thorough. Levels of "professional pay" have been arbitrarily set at 50 dollars for each technical class level. This amount was chosen because there is current legislation that authorizes the use of professional pay at that level, and other dollar figures would require a change in legislation. Other alternative pay increments are conceivable (based perhaps on labor elasticities) and may be used after the program has been permanently established.

The occupational specialties (MOS's) that have been chosen in the pilot program reflect a wide range and represent different categories. The pilot program includes members of operational and support units, which is significant due to the size of support units relative to the total force.

The pilot program intends to involve approximately 6200 soldiers that will participate over a three-year period [Ref. 1]. Probability for program success appears high, primarily due to the potential advantages discussed in the last chapter. The alternative (recruiting more and higher-quality recruits from a decreasing cohort) also adds some thrust to PBMS program success.

The idea of protecting the participants involved in the pilot program has received much consideration. Career potential for participants must remain intact regardless of program success, and the Army is developing a "Stop Loss" management system to fulfill this requirement. It will be in place prior to system implementation and will delineate procedures to protect pay and compensation, promotion eligibility, school selection, and will also state procedures for reintegration into the current system.

Besides protection, PBMS pilot programs also will include common rules and criteria that will show the participating chain of command how to effectively run the pilot program in their units and decide who will receive competency pay. An exhaustive list of responsibilities and cognizant individuals has also been developed; the method used for this listing was the functional life-cycle model of the Army.

Another consideration for pilot program implementation was the existing legal authority to implement such a program. Various titles of the U.S. Code deal specifically with pay grade/rank, pro-pay, bonuses, career length, rank structure, compensation, and other issues.

A systems approach to PBMS has also resulted in analysis of how PBMS relates and integrates to environmental changes, Army goals, force modernization, training plan, measures of performance and merit, research, long range and mission planning, and a host of other important areas, to ensure a consistent master strategy.

One of the most significant and least quantifiable issues of PBMS implementation is the role and identity of the soldier and his perception of military custom and tradition. As technical specialization has become a reality of our military forces, its integration has not been very successful. A clash between technical and leadership roles

has usually been evidenced, and this issue of enlisted force identity must be confronted, researched, and solved with heavy involvement of the NCO community.

4. Current Status

The concept has been conceived, implementation has been partially funded, and a pilot program has been planned to make PBMS a reality for the Army. Several different commands hold attitudes ranging from extremely positive to somewhat negative. The Office of the Secretary of Defense (OSD) supports the Army in the evaluation of the PBMS concept. The idea of a more senior force and training cost savings is in basic agreement with the President's Private Sector Survey on Cost Control (PPSSCC, or Grace Commission). The other services have a wait-and-see attitude for the most part. The Army DCSPER (Deputy Chief of Staff, Personnel) recommends program continuation with a delay in program milestones and a few other structure-related changes, as well as having a soldier survey completed and analyzed by the summer of 1984. Finally, additional funding for FY 1984 has been approved and the program is healthy.

The next section of this chapter will discuss the finer points of the Performance Based Compensation Analysis Model (PBCAM) which has provided much of the basis for program analysis and evaluation.

B. PBCAM

Before development passed the conceptual stage, an economic model was deemed necessary to determine whether PBMS was even remotely feasible. The Performance Based Compensation Analysis Model, developed under contract by The Assessment Group of Santa Monica, California, was designed to fill this specific need [Ref. 2].

1. Description

The PBCAM model was designed to predict force structure and size changes resulting from a user-determined set of pay and promotion rules. Although not yet in its final stage, the complete model will be capable of handling a larger scope of issues in a more sophisticated fashion and will give transition (year by year) results instead of steady-state (long-run) results. The full model will contain a Career Planning Model (CPM), a PBCAM model containig both transition and steady-state options, and interface with other manpower models, such as AMORE (AMORE, or Analysis of Military ORganizational Effectiveness, is a model that simulates a random attrition of combat personnel and then attempts to measure the degradation of capability).

There are two points that are important to make concerning the use of computers. There is no magic involved when using a computer...it is merely a combination of on-or-off circuits that allows the user to use the computer as a quick and sophisticated scratchpad. Manpower management has evolved to the point where computer assisted management is a necessity for the numbers and types of calculations involved.

The second point involving computers is that the computer is only capable of performing calculations based on a program that has been designed by a human. Any final output is based upon assumptions and algorithms that may or may not be correct.

a. Career Planning Model

The Career Planning Model (CPM), though not yet fully integrated, is based on the theory of human capital. Human capital theory treats the training of human beings as an investment that will reap future returns in productivity.

The more productive (or the longer period of time) a soldier is at work, the higher the success of the investment. Human capital investment theory also deals with who actually pays for the training (employer or employee) and the value of the training. Although the present models do not incorporate these ideas, models of the future could possibly include them.

A second concept that is fundamental to these manpower models is the concept of present value. In order to compare the costs to the benefits of different investments that are made at different times, a common denominator that puts these costs and returns on the same scale for comparison is net present value. Net present value is based on the idea that (in most cases) an amount of money that is lent today is worth more than the exact same amount of money lent next year. Due to factors such as uncertainty and inflation, the lender must be compensated for waiting to get his money back. The proportion of the initial amount of money lent that is required each year to compensate the lender for waiting is known as the annual discount rate. The formula:

$$\text{Repayment} = \text{Principal} \times (1 + \text{Discount rate})^{\text{periods}}$$

or

$$R = PV\ (1+d)^{t}$$

is a means of calculating PV (present value), which allows us to compare costs with returns. Through manipulation of the basic formula, various rates of return and streams of costs/payments can also be calculated.

The present value formula is the foundation for calculating and then comparing different costs and returns over the career of a soldier. As an example, the tradeoff between increased length (cost) of training and productivity can be compared using present values for different mixes.

As mentioned earlier, a soldier's productivity is not an easily quantifiable value. This fact causes us to use assumptions about returns on the investment of human capital. One basic assumption that is used by the model is that all labor costs incurred by the service (compensation, training costs, etc.) reflect the productivity of labor, or the marginal value product. This assumption (perhaps incorrect) implies that the soldier is paid exactly for his productivity (the government would not pay him more than he was worth and the soldier would not want to work for less than what he was worth). As a result of a study done by The Assessment Group in 1982 the assumption is also made that the discount rate, or rate of return to investment, is ten percent for a soldier. With these assumptions, plus a baseline population and cost data set, one can calculate the present value of cost and return streams associated with a specific type of investment (like training for an MOS). Incorporating the use of probabilities and expected return, a curve consisting of optimal combinations can be established. When reenlistment bonuses and retirement costs are added, even further accuracy is the result. The type of information that can be derived from a model such as this includes optimal timing for promotion flow points associated with training, required pay increase points and amounts for maximized retention, and eligibility cut-off points for those in a slowed promotion cycle.

b. AMORE

The AMORE (Analysis of Military ORganizational Effectiveness) model is a model used by the Department of Defense for determining the operational capability of a unit due to reduced manning (caused either by lack of available manpower or casualties). The full PBCAM model will interface directly with AMORE, which will allow direct measurement (via simulation) of the readiness impact associated with reduced manning due to PBMS. Being able to induce shortages in specific MOS skills can ultimately result in dollar values of relative contributions to readiness, and thus help prioritize funding for training.

2. Construction of PBCAM

The purpose of the Performance Based Compensation Analysis Model is to make comparisons of inventories resulting from long term, or steady state application of PBMS as opposed to the current Enlisted Personnel Management System (EPMS). The comparisons of inventories and costs are made for each MOS previously mentioned. There are several data bases contained in the program. The data bases are based on 1983 figures and include enlisted pay tables, continuation rates and promotion rates by length-of-service (LOS) and pay grade, and training and testing costs. User-friendly routines facilitate the entry of specific variables, and nine program-defined function keys allow the operator a wide variety of data manipulation. The program is currently stored on two floppy disks that are used in conjunction with an IBM Personal Computer.

The main pretext of PBMS is that its implementation would lead, in the long term, to an increase in manning in most military occupational specialties if all other parameters remained constant (accessions in particular). To

compare this to the current EPMS force, the PBMS model must be scaled down so that PBMS costs can be compared to EPMS costs on a per capita (per person) basis. This scaling factor is the ratio of PBMS annual accessions to EPMS annual accessions where both would result in the same size force. As an example, suppose the ratio of a PBMS force to the EPMS force is 1.10 (ten percent higher). This means that PBMS would cost more than the EPMS system for that particular military occupational specialty.

Suppose that the user wishes to compare costs for an equally manned PBMS force versus an EPMS force. If the ratio was 1.10, then one would actually need to use the inverse of this figure, or 0.91, to compare costs (this adjustment is used to make the two forces the same size). When using the computer program's REPORT function to make such comparisons using the model, these ratios will be given to the user.

Another item of information that is generated by the REPORT function is a breakdown of annual costs. Costs are displayed (in millions of dollars) and are based on the accession ratio that the user has selected. The costs are broken down into FULL ANNUAL COST, RETIREMENT COST, TRAINING COST, BASE PAY, and PROFICIENCY PAY. These costs are displayed for EPMS and PBMS; a column listing RESULTANT SAVINGS (or lack thereof) is given, and PERCENTAGE OF SAVINGS is also listed.

The key display on the REPORT display is the display of the projected PBMS force. Manning is given by LEADER LEVEL (LL) and COMPETENCY LEVEL (CL). LEADER LEVELS (the vertical component) range from LL0 to LL5. The following figure shows the relation between paygrade and leader level:

LL0.....E-1 to E-3
LL1.....E-4
LL2.....E-5
LL3.....E-6
LL4.....E-7
LL5.....E-8 and E-9

Figure 3.2 Paygrade/Leader Level Relationship.

The model also designates COMPETENCY LEVEL (CL) which corresponds to the horizontal (technical) component of PBMS. Each leader level can have up to five competency levels, but this is not always the case and an MOS can have as few as only one competency level for a particular leader level. The following figure demonstrates corresponding pay for competency levels as they are presently authorized:

TABLE II

Proficiency Pay vs. Competency Level

$COMP	BASE PAY +	$50	$100	$150	$200
LL X	CL 0	CL 1	CL 2	CL 3	CL 4
LL X+1	CL 0	CL 1	CL 2	CL 3	CL 4

The display on the screen will reflect the structure of the MOS for leader levels and number of competency levels for each leader level. Alongside, in two columns, can be found the percentage of manning with relation to authorized billets.

The last piece of information found from the REPORT display is GOODNESS OF FIT. The LL/CL goodness of fit measure demonstrates how well resultant PBMS manning fits the allowed authorizations. The fit is better and therefore more desirable as the goodness of fit figure approaches zero.

This concludes the groundwork needed to understand the PBCAM model display. The next section will describe each of the programmed functions in a little more detail. Appendices F, G, and H may be used as a reference for the appearance of the various displays.

3. Operation of the PBCAM Model

Complete operating instructions can be found in the PBCAM booklet published by The Assessment Group. It describes some of the general options available to the operator. The beauty of the PBCAM model lies in the fact that the operator is able to revise policy parameters and then run the model to see exactly how the decisions will affect cost and manning level. Although transitional information is not yet available, the steady state information is very valuable and gives the long run results of the operator's policy change considerations.

a. CHGMOS

The Function One key (F1) is used to change the military occupational specialty (MOS) that the model will run. Striking the key will cycle through each MOS available.

b. MODIFY

The Function Two key (F2) is used to modify certain parameters. Activating MODIFY will display the PBMS specifications for one leader level. Refer to Appendix F during this discussion.

The heading will include the number of competency levels in the particular leader level and a column representing each competency level. The Enlisted Paygrade (3 to 9) and Proficiency Pay Level (0 to 3) together determine compensation for this LL/CL.

The two YOS rows specify the minimum years of service or maximum years of service to be eligible for this particular LL/CL. Adjusting the maximum YOS will result in the up-or-out policy the operator wishes to designate.

The next row, Percent flow from previous CL, displays the career progression from one competency level to the next, both in terms of YOS and by proportion of those who are advanced (percent flow). By adjusting this quantity, it would be possible to eventually arrive at authorized levels of inventory.

The Number of lateral entries is a nice feature because it allows for the possibility of entrants to the service from the civil sector (or other services). The model assumes that training costs have already been paid for lateral entrants, but future modification will be necessary to include basic training costs.

Entry cost (training/testing) and Days spent (training/testing) together specify the training costs required for entry into the competency level, which varies for each MOS.

Last YOS for promotion to next LL sets a decision point that prevents the model from charging a service member a second time for the same required school also

needed for a higher leader level. This also corresponds to a Career Decision Point, where a soldier must choose between a technical career and a leadership track. This value is specified by a particular YOS.

CL (0 to 4) promoted to in next LL correlates technical qualifications possessed by a service member to the highest CL he would be eligible for in the next lower level.

Authorizations to measure against is an input for the policymaker's estimate of manpower to meet FY 1987 authorizations, affecting goodness of fit.

Finally, the EPMS Training Cost Summary demonstrates a breakdown of dollar cost and days of training per man for specific training.

To use the MODIFY function, first press the (F2) key. The LEADER LEVEL field will blink, and at this point the user would select the desired LL. Next, the same would happen for COMPETENCY LEVEL. Following this, the cursor can be moved to modify any desired field.

c. TRAIN

The Function Three (F3) key is used to display the EPMS TRAINing scheme. The information displayed presents, by skill level, the type of course, long term average course costs (minus student pay and allowances), and the course length. The user has all pertinent training information at his fingertips (the input data is currently being updated).

d. DRAW

The Function Four (F4) key is used to DRAW a career path diagram for a specific MOS (like the diagram in Appendix G). Leader levels progress vertically, and YOS/CL progress horizontally. This function may also be used after

modifying the program in order to see how policy changes would affect the structure.

e. REPORT

The Function Five (F5) key is the REPORT key, which calculates the projected inventories and costs for the proposed MOS. This display is the most important display that the model uses and offers the operator the most information. The MOS being analyzed is given at the top. Inventory comparisons are made for different categories of the force. These categories are:

a) Those with 4 years of service (YOS) and above

b) Top 6 paygrades (E-4 to E-9)

c) Top 5 paygrades (E-5 to E-9)

d) Total force

Numbers and ratios are supplied to the user with accession ratios for cost comparison. The left side of the display exhibits the leadership and competency level structure for the particular MOS, as well as the PBMS inventory and EPMS authorizations. A percentage column shows how well the manning is achieved under PBMS, and a summary measure of fit gives the overall manning fit. Refer to Appendix H.

f. PRINT

The Function Six (F6) key is used to select the PRINT option. This option is only available from the REPORT screen, and it provides a hard copy for the operator.

g. SAVE

The Function Seven (F7) key is used to select the SAVE option. Striking SAVE allows the user to save a specific set of specifications and parameters on his disk under the program name of his choice.

h. FETCH

The Function Eight (F8) key is used to retrieve or FETCH a previously saved data set.

i. QUIT

The Function Nine (F9) key is used to save the INPUTSET specifications data and return to system level.

At any point, the user may DRAW, FETCH, SAVE, or QUIT. After MODIFYing and requesting a REPORT, calculations may take up to two minutes. These are only basic instructions for the model, and more detailed instructions are available in the PBCAM booklet. The following chapter will continue with a discussion of implementation prospects for the U.S. Navy.

IV. PBMS APPLIED TO THE U.S. NAVY

A. CURRENT INADEQUACIES

Managers often are amazed to find out that the solutions to very complicated problems are masked in simplicity. In the book In Search of Excellence, the common ingredient of all of the "excellent" companies surveyed was their ability to do well on the "basics" [Ref. 11]. All of the common "motherhoods" of management science are well known, but they are not always followed. This thesis will not really present any "new ideas" that have not been discussed elsewhere in the management community, and yet the thorough and proper implementation of old, basic ideas could very well revolutionize the DoD personnel management system.

A recent article in the Navy Times of May 7, 1984 made front page headlines. "Better Force Planning for Enlisteds Proposed" was the title, and the following quotation from the article is of interest:

> "WASHINGTON--- Pentagon officials plan to revise the enlisted personnel management system next year in a way that could smooth career paths for members and curb on-again, off-again promotion and bonus opportunities that make career planning difficult.... Defense Department and service officials plan to revise the enlisted management system by requiring the services each year to provide specific projections and enlisted manpower requirements--by paygrade, years of service and occupational field--for up to five years into the future. They would also have to develop individual service plans to achieve the objectives. While improved career planning for members would be a side benefit of the system change, officials said the proposal responds to mounting criticism from Congress that the services lack understandable, long-range forecasts of enlisted requirements, making it difficult for Congress to monitor the adequacy of annual grade and bonus money requests." [Ref. 12]

The very end of the article gave one Government Accounting Officer's view of the proposed management changes.

> "....'The concept has been around a long time. Conceptually, it's been on the street since 1972. However, it was never really enforced or used or fully developed as a management tool....although some services did much better than others. The idea is to have a stable career force and smooth the growth over time and look at the long term consequences.'
>
> ....'It's a process to (help them achieve) what they say they need. The half that's missing is, "What is it that they really need?" That part supposedly is what they are working on, but it has not surfaced.' " [Ref. 12]

Again, the idea of the "basics" not being adequately performed still appears to be a problem. Although the concept discussed in the article, "objective force", is a step in the right direction, the tie between requirements and performance of those requirements still needs to be strengthened to really justify any compensation policy. The objective force (five year manpower requirements by grade and years of service) is an important stepping stone to PBMS and is wholly supported by this author.

In reading this article, as well as what is apparent from other sources, the present manpower management system is still capable of further refinement, and the performance based management idea is a very likely candidate for review and possible implementation.

Generally speaking, the Army has been predominantly concerned with behavioral competence (leadership ability in the field), as opposed to the Navy, which has been much more concerned with technical competence (skill requirements relating to systems). It is interesting to note, however, that the Army was the first service to conceive of PBMS as a solution to its current problems, even though its advantages are more fully realized in a technical system such as the Navy's.

1. Advantages/Disadvantages of Navy PBMS

The first chapter of the thesis contained a general list of advantages and disadvantages to be gained from servicewide PBMS implementation. A more refined list may now be appropriately constructed that looks strictly at U.S. Navy PBMS implementation.

Before constructing this specific list of advantages and disadvantages, one point should be made concerning objectives. Each particular system that is implemented in the DoD is designed to attain certain objectives, especially when relating to compensation. The system of enlistment bonuses was originated to attract recruits and increase accessions. The current Navy Selective Reenlistment Bonus (SRB) system is used to fill shortages. Although some may claim that the SRB is used to improve performance of individuals in the fleet, its basic function is still to fill billets, and any increase in the performance or competency of the individual is merely a by-product (in this case, desirable) of the system. We are only rewarding those individuals who fulfill the SRB eligibility requirements, and sometimes this reward is given to people with questionable performance. A performance based management system will bridge the gap by rewarding what we actually want to reward, and that is performance.

With this main objective in mind, one can begin to analyze the requirements and nature of naval forces and determine some of the obvious advantages and disadvantages of a PBMS system.

2. Advantages

a. Hi-tech Navy

A system like PBMS potentially realizes its highest savings and benefit when used in an organization that is highly technical and requires significant personnel training. The success or failure of most operational U.S. Navy afloat units is directly dependent upon the proficiency of the operators and maintainers of various sophisticated systems. There is considerable competition for quality high-school graduates with the potential for technical education,and PBMS could more effectively utilize this scarce resource. Although no studies have effectively linked increased technology to higher educational requirements in the service, the tend towards high technology systems will most likely result in higher requirements in some areas.

b. Mobile and Deployed Navy

This characteristic offers both advantages and disadvantages. A high deployment rate results in a higher opportunity to operate and maintain important systems. Frequent training opportunities in a variety of scenarios also offers frequent opportunity to measure proficiency. Since unit performance is regularly evaluated at sea (such as REFTRA or PEB), specific individual performance also seems a likely candidate for concurrent measurement.

c. Older and Retention-oriented Force

Some navy studies have linked higher productivity with an older, more experienced force [Ref. 13]. Navy units do have certain requirements for physical stamina, but a slightly older force would cause virtually no system degradation due to lack of physical ability (other

services have higher dependence on physical ability). PBMS is also in harmony with the present Navy-wide goal of increased retention [Ref. 14].

d. Technical Billets at Sea

Although not intended to be an incentive program for sea duty, this would be a desirable by-product of PBMS due to the preponderance of technical billets being at sea. If PBMS rewards those in technical billets only, competition for sea-duty billets may increase, and the competition for a few technical shore billets could significantly enhance the quality of instructors and training.

e. Quantifiable Performance

All services have had problems to some degree in trying to simulate wartime conditions, but in most cases naval systems performance can be observed, tested, and quantified during peacetime conditions. Proficiency of operators and maintainers can be measured, resulting in higher readiness for a "come-as-you-are" war.

3. Disadvantages

a. Mobile and Deployed Navy

Opportunities for classroom training and testing are severely limited for deployed units. Proficiency testing opportunities for PBMS may also be limited if they require the use of special facilities and trainers, and the scheduling of personnel to be tested for proficiency may become an administrative burden.

b. Sea/Shore Rotation

For the most efficient utilization of high-tech personnel, reward would most likely go to only those in specified technical billets that have met certification requirements. This could result in dissatisfaction of fleet personnel taking a "pay-cut" when going to shore duty (this perception is already held in relation to the sea-pay program). In an efficient system, highly-trained personnel should be highly utilized. Due to the number of combat-associated technical billets, it would be more cost efficient to train males than females, and this in turn could result in less training for female sailors. This lack of training opportunity would be perceived as unfair and sexually biased.

c. Highly-Tailored System

The large amount of variety in systems, platforms, and NEC's (Navy Enlisted Classification Codes) present a major obstacle in devising a fair system to establish performance requirements and testing. Tests would be most likely need to be tailor-made for individuals with specific training on certain equipment.

d. Costly Testing System

Administering the complex performance tests (both hands-on and written) will take significant time and energy, as well as being more costly. Developing tests and standards is a major hurdle to overcome, and keeping the testing system reliable and secure will also pose significant problems.

e. Combat Survivability

Adequate models that determine the impact of the loss of key personnel in a weapons system (such as AMORE) have not yet reached adequate sophistication, and outcomes are still questionable. An older experienced force could conceivably result in over-dependence on technical personnel and not enough younger inexperienced personnel to perform necessary combat functions (such as messengers, phone-talkers, watchstanders, fire party personnel, etc.).

f. Force Structure

The ultimate objective is obtaining the proper manpower mix needed by the Navy. PBMS may not be able to supply the proper force structure without significant experimentation and revision.

These are only a few of the issues involved with PBMS implementation in the U.S. Navy, and undoubtedly many more will surface. The next section will continue assessing Navy requirements.

B. REQUIREMENTS OF A NAVY PBMS SYSTEM

In examining the feasibility of performance based management in the Navy, it would be worthwhile to examine some of the ground rules and restrictions, as well as other limiting considerations that must be taken into account, that are unique to the Navy.

1. Ground Rules and Restrictions

The first basic areas of interest to look at when considering PBMS implementation are those areas that are relatively fixed and unchangeable. There are certain restrictions that must be adhered to by the present as well

as any proposed systems. The following list of restrictions are only a few of the more important ones.

a. Legal Restrictions

Various parts of the U.S. Constitution, titles of the U.S. Code, and other public laws specify the purpose, structure, and operating procedures to be followed by the Department of Defense and the U.S. Navy. The PBMS system, if implemented, would only change a few laws and would have a relatively minor impact (these laws would reflect changes in dollar amounts for compensation and other PBMS procedures). There are many laws that PBMS would not directly change, but these laws would exert a significant influence on the PBMS system (i.e., the role of women in combat forces). Legal implications would require thorough review by the Judge Advocate General Corps.

b. Combat vs. Support Units

Current naval forces are presently a mix of deployed combat units and non-combat support units. Policymakers will need to consider how training dollars and technical billets will be allocated to each sector, given that the make-up of the force remains constant.

c. Sea/Shore Rotation

As mentioned previously, will a sailor going to a non-technical billet be forced to take a cut in pay? How much of a cut will take place for those in technical ratings that accept general duty billets? There are also units that are not regularly deployed and only utilize high-tech ratings for short periods of time. Being that sea/shore rotation is a "given" parameter of the equation, it will need to be specifically dealt with.

d. Policy Changes

A critical component of PBMS is the ability to change the size and structure of the force through changes in policy. As demonstrated by current proposed changes in the total compensation package, too many proposed policy changes are perceived by the fleet as a breach of implied contract, resulting in dissatisfaction and instability [Ref. 15]. To ensure stability, PBMS should designate what areas are subject to change (pay rates, time to promotion, etc.) and what parts of the system will remain static. The job of the command career counselor may become overwhelming when trying to give advice on such a complex system.

e. Rate Structure

The area of military custom and tradition must not be too severely tampered with. Some proponents of Army PBMS are considering special insignia that identifies the wearer as a leader or as a technician. Would this be appropriate for the Navy? Currently, privileges and benefits are dependent upon one's paygrade. There could be resentment when an E-4 technician with fifteen years of service and a large family is not given an adequate household goods weight allowance or is denied access to certain petty-officers' clubs. The present force may be unwilling to accomodate too many sweeping changes to already-established non-pecuniary benefits and "perks" commensurate with paygrade.

These are only a few examples of the fixed parameters that any management system is subject to in the Navy. There are other considerations and questions that are relatively unique to the Navy which planners must take into account. The next section presents some of these.

2. Navy-Oriented Considerations

a. Reward Tied to Billet

To achieve better utilization of highly trained personnel, should proficiency pay only be paid to those serving in high-tech billets? Could it also be paid according to the highest competency level that a sailor has attained regardless of the billet being occupied? Perhaps the latter is a better solution, because when the time comes for him to occupy a technical billet, he will already be proficient and ready to fill it. This is similar to the argument supporting Aviation Career Incentive Pay, and although it may be somewhat costlier, it may have similar advantages.

b. Male and Female Sailors

Would female sailors be presented with an equal opportunity for training and proficiency pay, or would needs of the service make this unlikely? Again, a consideration that must be dealt with.

c. Specificity

The current Navy training and testing system already faces the problem of how specific it should be when testing sailors. Most sailors in a specific rating must be familiar with a a variety of equipment, including some gear that they have never seen before. The Army has a similar problem with tank crews (a fully qualified M-60 tank gunner may be unqualified in an M-1 tank). Since the Navy trains its personnel through a specific pipeline to operate specific equipment, perhaps the solution would be to test their proficiency only on the gear that they operate or maintain. Tests would be tailor-made for individuals in specific billets with specific NEC's by the use of a

question bank. A computer at the Naval Education and Training Command (NETC) could verify what training courses and what billets a particular sailor has familiarity with, and then generate a test from appropriate question banks. Each rating would still be responsible for general knowledge of the rating, but sailors would be forced to be thoroughly proficient in the billet that they are in.

d. Ingredients of Testing

There is no doubt that testing will be costly and test security will be a problem, but for an individual to maintain and be rewarded for a certain competency level, tests must be given on a regular cycle (for example, every 12 or 18 months). Some tests may be in a format other than paper and pencil, and such as hands-on testing through simulators or during actual fleet exercises. Reliability, validity, and practicality will be the key ingredients of the test program.

e. Integration with HARDMAN

Once the program has been adopted, the Navy should insure that all of the contractors and other personnel involved with the acquisition of new systems and hardware be familiar with the PBMS system. They should also ensure that all new systems be specific in stating the manpower requirements in terms of leader level and competency level. Quality requirements and effect on the composition of the force are prime considerations of the weapons acquisition process.

f. Flexibility

As the U.S. Army pilot program develops, the Navy must be sure to task a cognizant activity with the responsibility of closely monitoring the Army's program. As

certain pitfalls and traps are encountered, the Navy can benefit by changing its program so that it will not duplicate the Army's mistakes.

g. Evaluation of the Pilot Program

The key ingredient in determining whether PBMS will actually work is a thorough evaluation of a pilot program. Data obtained from this pilot program will help uncover all the attitudes of the test group as well as give a closer approximation of the actual costs involved. Testing and evaluation of the pilot program must be given high pricrity and attention.

C. RECOMMENDATIONS FOR PROGRAM IMPLEMENTATION

1. Results of Research

The intent of this thesis was to examine the current development of performance based management and try to determine whether such a program would be feasible for the Navy. From the onset of the project, this researcher was aware of the possibility that hard and concrete numbers might not be available to affirm or deny the feasibility of such a program in the Navy. The information and data that was required to perform an accurate study was not available in the proper form to this researcher (particularly with respect to promotion rates and school costs). This researcher would, however, like to prescribe a format (recipe) that could be utilized by others to attain the proper data and adequately analyze PBMS for use by the Navy.

There were several problems in trying to perform a quantitative analysis of the PBCAM model using Navy data. Most of the problems concerned the acquisition of appropriate data sets.

There are three important (but elusive) data sets that must be obtained for proper PBCAM operation. The first data set, continuation rate by length of service (LOS) and paygrade, is regularly published by the Navy Manpower and Personnel Command (NMPC) and is available upon request for each particular Navy rating. The data must still be converted to a computer-usable format for PBCAM. The resultant data set should be in seven columns (E1-E3, E4,...E9) and thirty rows per column (YOS 1-30). Each entry represents a continuation rate for those in each respective cell.

The second data set needed for PBCAM operation was promotion rate by LOS and paygrade for each respective rating. Promotion data was not found by this researcher and normally must be constructed from continuation, accession, and other data. Continuation gives a probability of the service member being in the service the following year, which is relatively easy to determine by computer. Promotion rate, the probability of a service member being promoted to the next higher paygrade for each cell, is more difficult to find and requires more sophisticated data manipulation. Although this researcher requested the information specifically from two different sources (OP-135 and DMDC) neither source was able to supply these promotion rate tables. Promotion rate tables are in the same exact format as continuation rates, and are absolutely necessary for the model to forecast manning levels (the use of promotion rates may not be the best way to forecast, and later enhanced models may possibly use labor supply elasticities).

A third data set that was difficult to obtain was that of training costs. There are many differences in methods that allocate costs to each student. Research is currently being done by the Center for Naval Analyses (CNA) that demonstrates different average costs for training students having different mental categories [Ref. 16].

Comparison of CNA data and NETC data for the same year did not often match, due to assumptions that had been made for the allocation of costs. CNETNOTE 1514 contains Navy Enlisted Skill Rating Pipelines and associated costs. The present reference work concerning cost information for Navy schools is the Navy Comprehensive Compensation and Supply Study (NACCS) [Ref. 17]. It is recommended that future research that concerns costing use the system prescribed and established in this study for consistency. In preparing costs for PBCAM, CNET data must be adjusted because it includes base pay for the duration of the school, resulting in double-counting.

These three data bases need to be entered for PBCAM to run. The present format of the data in the PBCAM program precluded this researcher from entering Navy data, as it was imbedded in the program. Future enhanced PBCAM models should allow for easier entry of cost and continuation/ promotion data. Other data sets, such as current pay tables, are relatively straightforward.

2. Application of PBCAM Model

This section hopes to be an aid to further research concerning PBMS application to the Navy. Although this thesis has concentrated on subjective and qualitative issues, further research will hopefully yield solid quantitative results.

The Navy PBCAM model should include ratings from subsurface, surface, and aviation communities. Technical (with a few non-technical) ratings should be chosen, and shore-based support ratings should also be represented. Cost data on training pipelines as well as continuation rate data are also prerequisites for choosing a particular rating. This researcher chose Avionics Technician (AT), Electronic Warfare Technician (EW), and Yeoman (YN)

originally because costing data was known to exist. The Army model contained five general MOS areas (including combat, combat support, and combat service support groups) and plans for model enhancement include the addition of other specialty areas (other tank personnel and linguists).

Once the ratings are chosen, the data sets for continuation rates, promotion rates, and pipeline training costs must be gathered and put into the proper format for data entry. Continuation rates are available from the Defense Manpower Data Center (DMDC) by comparing the Enlisted Master File from one year to the next. The algorithm for creating the table of promotion rates can be found in the PBCAM manual [Ref. 2]. As mentioned previously, by using promotion rates instead of labor supply elasticity, one is relying on the assumption that service members are responding only to the pay tables (nonpecuniary compensation such as rank, priveleges, etc. are ignored). Future models (and the pilot program) should take into account estimates of the nonpecuniary income elasticity of labor supply. Additionally, the data set that contains pay tables should be entered using current information, as this information usually changes annually.

Finding and identifying pipeline training costs is also a key issue. Costs should not reflect the student's pay and allowances while attending school because they are included elsewhere in the model. Assumptions made in the NCCSS should be followed for the sake of consistency.

The Navy should also attempt to interface the PBCAM model with a model such as AMORE. Navy systems and therefore unit readiness are significantly affected by the loss of technical personnel and resulting system degradation, so these impacts should be thoroughly explored with a model prior to implementation.

The next step in program implementation would be tasking from the Chief of Naval Operations (CNO) to the program sponsor. The sponsor would then task other specific areas, set up meetings, and construct a plan of attack and milestones. Advice from the Army would be extremely helpful in this area, because the commands that the Army used in developing PBMS have similar counterparts in the Navy.

Job analysis would be a very large and important part of PBMS implementation. Existing information (such as NOTAP/NODAC, Navy manpower planning data, etc.) would need to be combined, carefully analyzed, reported, and entered into a data file to help identify the exact performance that is required for each individual unit. Those people that would be establishing manpower requirements would have to avoid rating inflation, which would be the overstating of actual requirements (asking for an E-5 where an E-4 would be suitable). The fine tuning of the system may eventually put more pressure on detailers to fill exact requirements instead of having the lattitude of one paygrade as they presently have. Job analysis will yield not only paygrade but also competency level, and detailers may eventually have only one competency level of lattitude when assigning technicians. Establishing what actually constitutes adequate proficiency for competency levels and paygrades is a giant task, but it is a necessary task for streamlining the manpower assignment/compensation process.

The training commands throughout the country will be particularly busy trying to develop rating examinations that are broken down into various competency levels. Much testing and validation will need to be performed to ensure that the tests are adequate. As the capability of the Navy's information and computer systems increases, these seemingly impossible tasks will become more manageable.

The Navy manpower analysts and policymakers will be busy trying to determine what policies will yield the most desirable force. They will need to establish a clear-cut formula for advancement that will include proper weighting for test score, performance evaluation, and recommendations. A point worksheet may very well be the end result. It will be up to the policy, analysis, and planning personnel to provide a force with no overcrowded rates, no shortages of critical skills, and a force that is planned five or ten years in advance to provide enough lead time as weapon system requirements change.

Most of this planning will be directed towards a pilot program similar to the one envisioned by the Army. Once all of the planning and analyses are completed, a pilot program of sufficient size can be implemented. Participants of the program will be protected in a manner similar to the Army's system so that their careers and compensation will not be adversely affected if the concept is not approved. The Human Resources Management System will closely follow the participants to examine their concerns and perceptions. Information from the validation of the pilot program will help to enhance accuracy of the model and resultant predictions. If the pilot program is successful, additional ratings may then be added to the program, providing in the long term a mild transition to PBMS with little shock.

3. Summary

The above description is presented as a very ideal and orderly implementation (and research) of the performance based management system. This particular scenario may not actually occur, and the program as it is now envisioned may be completely different from a future variant. It is important to realize, however, that PBMS is becoming a reality for the Army, and that now is the appropriate time

to conduct the research for the PBMS program in the event that the Navy is directed to make PBMS a reality also.

V. FUTURE PBMS: PROBLEMS, MODIFICATIONS, AND RECOMMENDATIONS

A. INTRODUCTORY REMARKS

Thus far, the concept of performance based management has been explained, analyzed, and considered for application to the U.S. Army and the U.S. Navy. The idea of applying performance based management and performance based compensation is still in its infancy and will have to endure many growing pains until it matures as a viable system. Historically, the rewarding of critical billets with higher compensation was done in the Army in the 1800's and highest benefits were paid to those in technical specialities such as ordnance. There is little disagreement in rewarding technical performance (especially when looking from an economist's viewpoint), and there is also little argument against rewarding those in leadership positions that have greater responsibility. Accomodating these two dimensions into one system has been difficult, and the contention by many managers is that the present system has not yet thoroughly solved this problem as of yet.

This paper has discussed some of the issues involved in constructing a system that will more suitably combine these two dimensions. Thus far, only the basic system that is currently being proposed has been analyzed for two different services. This chapter will take the program a step further by posing a few more questions and then outlining some potential modifications for the system. Recommendations that will help to fix some of the more serious potential problems will be discussed, and the final chapter (Conclusions) will provide the reader with a broad overview of the military application of performance based management.

B. PROBLEMS FOR RESOLUTION

Throughout the thesis, disadvantages as they apply to the entire military as well as Navy implementation have been discussed. At the risk of being redundant, this researcher would like to address some of the problems that may not have been thoroughly covered earlier.

There are two major problems that must be solved in order for performance based management to be successful. First, the establishment of realistic requirements and second, establishment of realistic performance standards and their measurement. These two problems must be adequately solved for the system to work.

The first problem (establishment of requirements) has actually been under analysis since the beginning of our armed forces. This same step, however, now requires a significantly increased degree of detail and sophistication. Throughout the programming and budgeting process, Congress has continued to ask DoD the question,"What do you need in the way of manpower requirements to operate?" Congress is becoming increasingly dissatisfied with the answer to that question every year, and the sooner the services have a capability to give a detailed report containing exact and justifiable leadership and technical requirements to DoD, the sooner they will get the authorization and funding for the required manpower.

Once the requirements have been established, they should not be tampered with for the sake of convenience or political motivation. The requirements would need to be reviewed on a regular cycle due to technological change over time, but the services would lose all credibility if they were to tamper with and change the stated requirements in order to satisfy other objectives. The requirements must be truly representative and not overstated for the same reason.

Congressional experts will quickly see through requests that have been inflated so that the services are asking for more quality and numbers of personnel than they really need.

The second problem (establishing realistic performance standards and measuring them) is most formidible. Throughout history, the inability to realistically assess performance has plagued the services. Even so, although it is formidible it is not impossible. The services have the machinery in place to adequately analyze each rating and to establish basic levels of leadership and technical competence. By using a cross section of techniques (such as delphi) and a cross section of analysis (operational unit, private contractor, and research facility analysis), a two-dimensional structure with leadership and technical levels can be reasonably constructed. This same structure will drive the establishment of the system used for evaluation and measurement. Commands responsible for training and testing can work with operational units (as well as private contractors) to determine how the desired performance can best be tested. Although this process may sound costly, it seems apparent that significant savings will ultimately be gained by rewarding the exact desired performance of individuals instead of throwing money at selected groups of people hoping that a percentage of the group that is worthy will be rewarded. The establishment of realistic performance standards and testing them by MOS/rating <u>is achievable</u> as well as desirable.

Another problem that is significant is trying to modify policy in order to optimize the size and cost of the force. Attaining the <u>exact</u> numbers of people in each respective cell will not be possible, but reasonable adjustment of career decision point gates and recruiting could yield a force that would approach optimality. Chasing the desired quantity numbers erratically by adjusting policy without

concern for quality implications must be avoided. People in the system deserve a certain amount of system stability, and if inconsistencies between year groups become too large, morale and retention will ultimately suffer.

The type of force that results from PBMS will be different from today's force, which may require adjustments in thinking. The force will be older, more career oriented, with a higher proportion of dependents. By increasing the dependence upon key technicians that operate and maintain vital systems, a heavier reliance is being placed on each individual. When a key system technician becomes a battle casualty, the ensuing loss of the entire system could have serious implications for unit survivability. This lack of redundancy will be analyzed when the model is interfaced with AMORE.

The content of the force will still be under the same deployed/CONUS assignment, sea/shore rotation, and male/female manning policy restrictions as the current system, and these issues must also be grappled with as previously mentioned.

C. POTENTIAL MODIFICATIONS OF PBMS

1. Planned Modifications

The performance based management system is already slated for some existing model enhancement, and the list of possible improvements is growing. The PBCAM, which is now refered to as the Economic Analysis Model, will be improved to include some new and better features. The data base will be updated, better reflecting current trends. The inclusion of a transition model to determine short term as well as long term results will be a welcome addition. The inclusion of bonus factors and their affects will help provide information on costs and elasticities. An accurate breakdown of

retirement costs will add to the reliability of predictions, and the inclusion of all specialties/ratings will broaden the analysis. Adding information concerning reserve and guard forces will give a better picture of the total force, and improved software will result in the easier input of data sets and will result in the model being more user friendly. The model will also be in concert with the recently announced objective force concept.

2. New Modifications for Consideration

This researcher would like to propose some of the following ideas to be considered as future modifications of PBMS:

a. Officer PBMS

The same characteristics, advantages, and disadvantages of enlisted PBMS would also be found in an officer system. The services presently use various methods to allow officers to specialize in a technical skill area instead of a predominantly leadership area (although they are still combined to a certain degree). The warrant officer grades and special corps' such as the Navy's Dental Corps are technically oriented. Perhaps other areas where high training costs are involved (such as nuclear or aviation officers) could be integrated into some sort of PBMS system. Many of the arguments are the same.

b. "Supertech"

The maximum number of authorized competency levels is presently five (CL0 through CL4). Once a technician has achieved the limit of his leadership capability but wishes to continue his technical path (perhaps he is the operator of a unique and complex x-ray machine), he could enter a competency level 5 (or some other name) where his

pay would be dependent upon length of service. Perhaps a seven percent annual pay raise would be adequate to keep him from entering the private sector and would keep him satisfied to perform the same job until he retired after thirty years. This "supertech" would not require PCS moves, would not be forced to be a supervisor, and would be satisfied with his job. He would remain adequately compensated as long as he continued to meet proficiency requirements. This is a key point, since continued competency (performance) would be necessary and requirements for upgraded skills could be adjusted to keep up with changing technology.

c. Payment

Thus far, the system has chosen pro-pay in fifty dollar increments. Further analysis would be necessary to determine more efficient and effective increments, although there have been few successful attempts in quantitatively determining how much the value of filling a certain requirement is worth. Additionally, the PBMS concept is not restricted to the use of pro-pay only. The system could be integrated with (and perhaps eventually eliminate the need for) the selective reenlistment bonus (SRB). Many taxpayers find the idea of paying one lump sum of thousands of dollars to a service member for just reenlisting a quite distasteful idea. The recipients of these bonuses are often not the top performers. An alternative might consist of taking the same SRB money and distributing it at specified intervals <u>based on performance</u>. The first payment would be similar to the first SRB lump sum but would be a smaller amount (6000 dollars in this example). Perhaps eighteen months later, he would be awarded 2000 dollars to requalify (on either the equipment he normally operates or for advancing to another competency level). Eighteen months later he would be awarded another 2000 dollars for training on a new system or

achieving another competency level. This would again happen eighteen months later. In this way, a 12,000 dollar SRB has been spaced out during the entire time span and is dependent upon the service member's continuing progress. Dollar amounts would have to be adjusted to the appropriate discount rates, but the preceding example demonstrates a possibility that might be more appealing to Congress.

d. Certification and Licensing

The use of this system is dependent upon regular certification, and in some respects is very similar to receiving a license. In fact, there are some ratings where commercial certification could result in advancement to the next competency level. In PBMS, if a service member's "license" expires or is revoked, the compensation for that level would also be discontinued. PBMS can be likened to a large certification program.

e. Selection Board Techniques

This particular recommendation is used to illustrate that test scores may not be the only means of determining advancement to the nest competency level. Each rating may have its own "best method" for determining and measuring performance.

f. Integration with School Programs

The service often trains and actually prepares people for leaving the service for civilian employment opportunities. A better method needs to be developed to link school with service. The Veteran's Education Assistance Program (VEAP) and its successors do not provide much of a return to the services. The cycle should be reversed so that the civil sector does the training and then the services reap the reward. Could a service member be

granted a two-year college program, and then return to active duty and be compensated at the increased competency level? PBMS might provide a starting point for educational programs to be used as an incentive, low cost training, and returned benefits. Even the use of a two or four year Delayed Entry Program (DEP) could be examined.

g. Quality of Entrants

The relationship of quality (as expressed by mental category) to training has already been demonstrated [Ref. 16]. There may also be other relationships that tie quality to other personnel functions such as recruiting or retention. The importance of the quality of the entrant should be included in future PBCAM models, for it is a parameter that significantly affects cost and force structure. Promotion rates are tied to mental category. Higher quality recruits take less time to train. It could conceivably be cheaper in the long run to recruit by mental category. Quality is an integral part of PBCAM results and should therefore be included.

h. Encouragement of Lateral Entry

Although the topic of lateral entry has arisen many times in military manpower, the PBMS concept would enable the services to make this a reality on a relatively large scale. Because the detailed job analysis and requirements would be specific, there would be no question whether a lateral entrant possessed the appropriate skills. After a military indoctrination, the new service member could pursue a well compensated technical career without needing to develop leadership skills, and the services could significantly benefit from civilian-trained people filling critical shortages.

The preceding proposals are ideas that could be analyzed and possibly incorporated into a performance based management system. The next section contains some recommendations that this researcher feels are critical to success.

D. RECOMMENDATIONS CONCERNING PBMS

Regardless of the timing or format of any future PBMS system, the following ingredients are critical to its success, and many of these same recommendations also apply to the current Enlisted Personnel Management System.

Computer management and expanded data base management systems are the only way to successfully manage this large and complex force. In virtually every phase of military human resource management, computers are already being used and their use must continue to be expanded. Computers should be used to match the service member to the job, to keep records of training and proficiency status, to keep a current account of costs invested in human capital, and be used to record other important statistics of the individual. This data base should then feed its data to the next level to calculate utilization rates of trained personnel, attrition, rating-specific information, and other information to be used by managers that make policy. Defense Manpower Data Center information and other data that is spread around the world must be collected and be usable for analysis and decision making. The use of computers for test composition and scoring also cannot be overstressed. Question banks containing hundreds of questions for each specific leader/competency level could be formulated to make tailor-made tests. Computer simulation of battle problems for testing some specific ratings could also be generated.

While speaking of testing, the testing system must continue to evolve. If the desired performance for a mechanic is to fix a specific component, then component repair should be tested. Sonar operators need audio tests, hull technicians should be tested on welding or practical damage control, construction equipment operators should grade a road, and so forth. A general test like the Army's Skill Qualification Test (SQT) is a good idea, but it cannot adequately discriminate ability on some specific skills. General testing, written rating tests, and practical physical tests must be integrated to give valid results on the desired measurement.

As previously mentioned, a proper evaluation of a pilot program is critical. Outside contractors may best be able to evaluate the program, establish criteria of success, and utilize advanced methods of analysis. The only way to realistically forecast outcomes of a PBMS program is careful evaluation and scrutiny of the pilot. More specific recommendations can be found in reference 1.

An explanation to the manpower force that is detailed yet simple is also critical. There is no point in confusing the manpower management system more, although PBMS is a more sophisticated and complex system. Human factors will be critical in ultimate success or failure.

There are a few more key benefits to PBMS that have not been mentioned yet and are worthy of mention. One of these benefits is flexibility. This program can be implemented in varying degrees. Only a few highly technical ratings could be made two-dimensional, or eighty percent or more of the ratings could be included. Payment methods could range from pro-pay only to incremental SRB payments. The transition could be slow with only minor changes being made, or the implementation could be a major overhaul of the management system.

Another selling point is the agreement of PBMS with current indicators. The Fifth Quadrennial Review on Military Compensation recommendations for longer career lengths is in agreement with PBMS. Many of the Grace Commission's (PPSSCC) recommendations coincide with the objectives of PBMS, especially cost.

The ingredients found in the above-average civilian companies have been listed in the recent book, In Search of Excellence (reference 11). PBMS contains many of these ingredients. It is action-oriented, caters to the user/customer (stresses performance), emphasizes personal accomplishment (certification), is driven by value (people are rewarded for performance), and fosters a competitive climate.

A final point to be made about implementing PBMS is timeliness. The military services are currently enjoying a position of strength. For the most part, critical ratings are not short, recruiting goals are being met, and funding is limited but available. Once a manpower crisis occurs, it will be too late to adequately plan and evaluate a solution. The next crisis, if solved in a haphazard fashion, will result in years of damage that would take time to heal. Many leading indicators point to further evaluation and possible implementation of performance based management in the military services. The time to act is now.

VI. CONCLUSIONS

The Enlisted Personnel Management Systems in the armed services do not adequately integrate two dimensions of performance, leadership competence and technical competence, into the current one dimensional system of management. Some services have chosen to emphasize one particular dimension at the expense of the other (Air Force emphasizing technical and Army emphasizing leadership), but there have been overall indications that legislators are dissatisfied with justification by the services of manpower requests, and that the use of skilled technicians in leadership billets is costly and a poor utilization of resources.

Present compensation methods are good for accession and filling critical needs, but the present system does not specifically reward the desired outcome; there is not enough of a linkage between performance and compensation. A proposed Performance Based Management System has been developed by the U.S. Army, and a corresponding Economic Analysis Model has been created to demonstrate various force structure, composition, and costs resulting from the changing of several basic parameters.

The highly-technical composition of the U.S. Navy makes it a logical candidate for a system using performance based management, and such a system could offer significant rewards. The system is not without faults, however, and it is not a panacea that would solve all problems, but rather a series of trade-offs.

Although the Army is progressing with analysis and intends to implement a pilot program, progress has been somewhat sluggish and the future of PBMS is tenuous. At this particular time of the military manpower cycle, the

services are in a relatively strong position and research conducted now could be carefully and thoroughly evaluated.

The research indicates that significant potential gains could be made utilizing a performance based management system, and this researcher strongly endorses further analysis and implementation of a pilot program by either the Army or the Navy as soon as practical.

There are many unknown parameters that need to be determined to fully evaluate the potential of a Navy PBMS system. Some of these issues and questions include specific training costs, labor supply and retention elasticities, the non-pecuniary compensation of the service, sea/shore (or deployed/non-deployed) requirements, reliable and valid methods of measuring specific performance, analysis on to what degree external economic conditions affect the services and certain policies, and perceptions held by those in the service concerning rewards and opportunities. The answers to these issues may never be fully answered, but as the answers to these questions improve, so will our compensation and maragement of personnel.

APPENDIX A

'PBMS GOAL STATEMENT'

PBMS GOAL

- ☐ TO IMPROVE THE TECHNICAL AND LEADERSHIP COMPETENCY OF THE ENLISTED FORCE.

- ☐ THIS MEANS PROVIDING:
  - A TWO-DIMENSIONAL SUCCESS SYSTEM
  - THAT IS PERFORMANCE BASED
  - THAT CAN BE CERTIFIED AND EVALUATED
  - THAT ACCOMMODATES CHANGING SOLDIER SUPPLY AND REQUIREMENTS DEMAND
  - THAT PROVIDES COMPENSATION AND STATUS LINKED TO LEVEL OF PERFORMANCE
  - AND IS CONSISTENT WITH THE ARMY TRAINING 90 CONCEPT

APPENDIX B

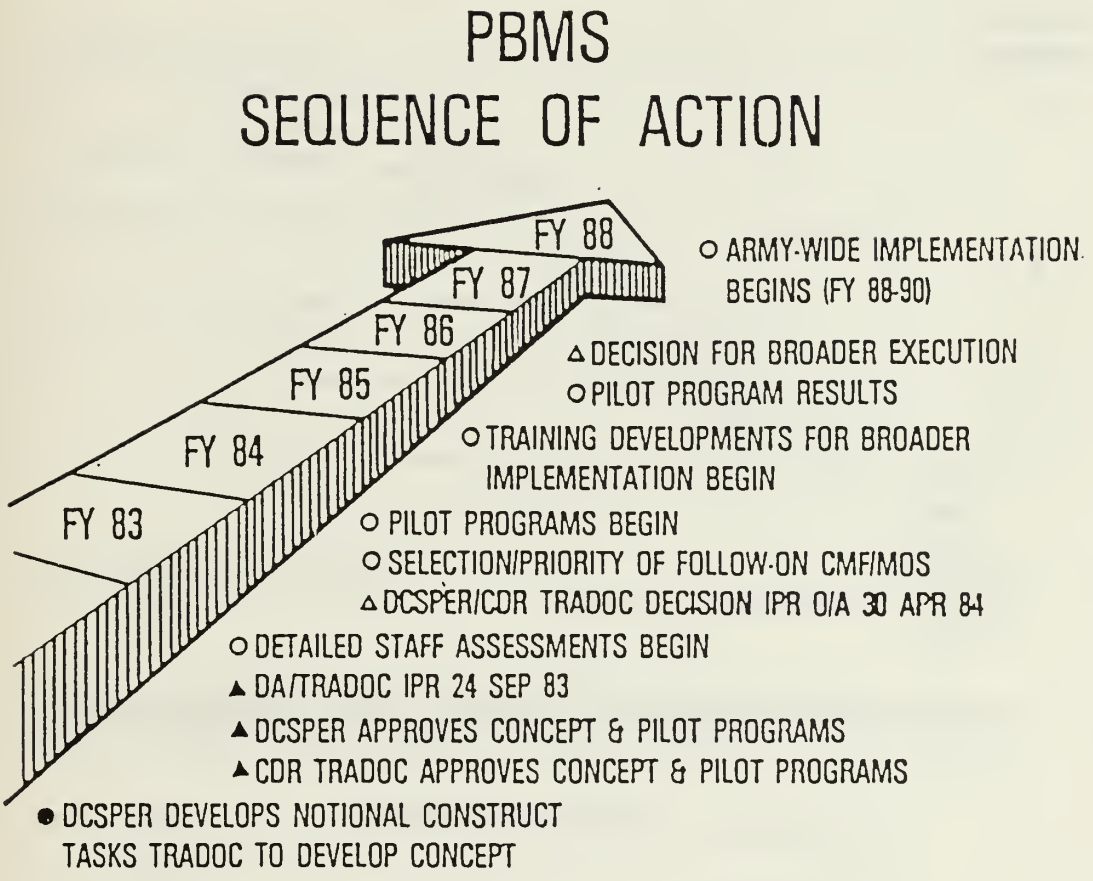
'PBMS APPROVED PILOT PROGRAMS'

PBMS
APPROVED PILOT PROGRAMS

- COMBAT
  - 19E (M60 ARMOR CREWMAN)
- COMBAT SUPPORT
  - 33S (ELECTRONIC WARFARE SYSTEMS REPAIR)
  - 35 K,L,M,P,R (AVIONICS REPAIR)
- COMBAT SERVICE SUPPORT
  - 66J & 68J (AIRCRAFT INSPECTION/REPAIR)
  - 91P (X-RAY SPECIALIST)

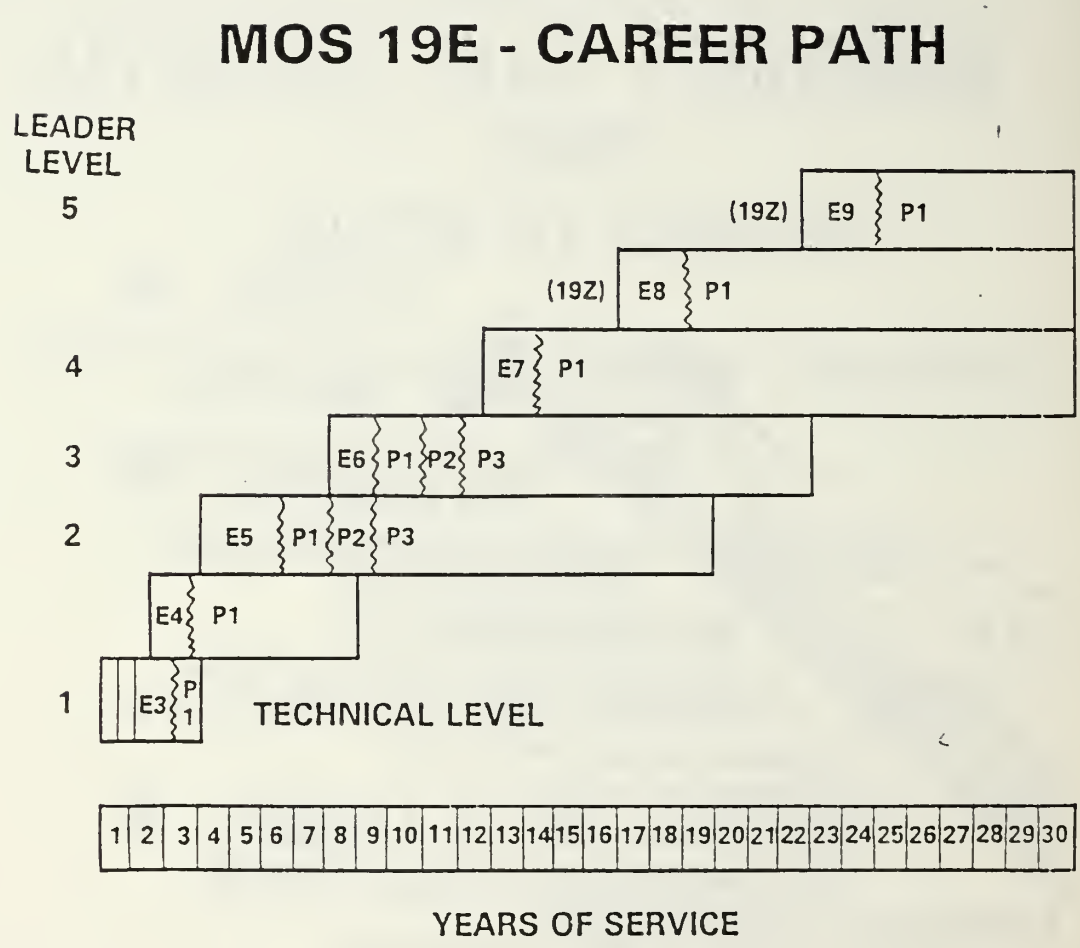
APPENDIX C

'PBMS SEQUENCE OF ACTION'



APPENDIX D

'TYPICAL MOS CAREER PATH'



APPENDIX E

'PBMS CURRENT FUNDING'

This appendix is supplied to give the reader a general idea of the amount of funding that has been awarded thus far to develop the concept and also future prospects for funding.

.....

ALREADY FUNDED

FY 1984.....$ 144,000

.....

PROJECTED FUNDING

Travel money, test money, contracts, and validity testing

FY 1984.....$ 560,000

FY 1985.....$ 640,000

FY 1986.....$ 610,000

FY 1987.....$ 610,000

APPENDIX F

'PBCAM SAMPLE OUTPUT...2MODIFY'

FORCE COMPETENCY MODEL analysing MOS 19E

Modifying Leader Level: 2

With 4 Competency Levels (CL)	0	1	2	3
Enlisted Paygrade (3 to 9)	5	5	5	5
Proficiency Pay Level (0 to 3)	0	1	2	3
Minimum YOS for CL (1 or more)	5	7	9	11
Maximum YOS for CL (30 or less)	13	13	13	20
Percent flow from previous CL	0	90	90	90
Number of lateral entries	0	0	0	0
Entry cost (training/testing)	5397	300	400	500
Days spent (training/testing)	20	0	0	0
Last YOS for promotion to next LL	13	13	13	20
CL (0 to 4) promoted to in next LL	0	1	1	1
Authorizations to measure against	11	23	46	34

EPMS Training Cost Summary: MOSB total costs minus student pay and allowances.

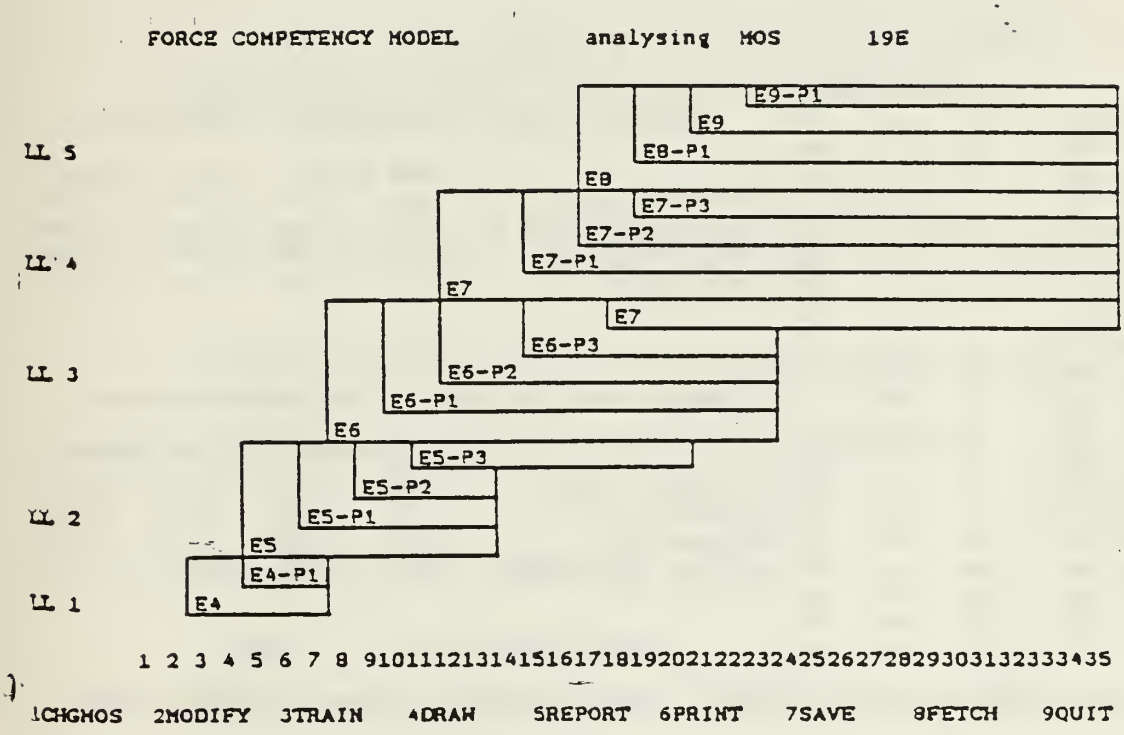
	Name	Cost	Days
Skill Level 0	Basic	2715	39
Skill Level 1	AIT	7795	30
Skill Level 2	PNCOC	5397	20
Skill Level 3	BNCOC	5497	20

1CHGMOS 2MODIFY 3TRAIN 4DRAW 5REPORT 6PRINT 7SAVE 8FETCH 9QUIT

Force Competency Model: 2MODIFY

APPENDIX G

'PBCAM SAMPLE OUTPUT...4DRAW'



Force Competency Model: 4DRAW

APPENDIX H

'PBCAM SAMPLE OUTPUT...5REPORT'

```
        FORCE COMPETENCY MODEL          analysing  MOS      19E

             MEN  AUTH  %age
LL5 CL3        0     1    14      INVENTORY COMPARISONS WITH EQUAL ACCESSIONS
LL5 CL2        1     1    86
LL5 CL1       24     5   487                              EPMS FORCE C   Ratio Inverse
LL5 CL0        2     5    32   4 or more YOS               161     177   1.099   0.910
LL4 CL3        5     7    68   Top 6 Paygrades             227     242   1.069   0.935
LL4 CL2       11    10   109   Top 5 Paygrades             164     172   1.044   0.958
LL4 CL1       14     4   352   Total Force                 341     357   1.046   0.956
LL4 CL0        3     3    93
LL3 CL4        1    16     7
LL3 CL3        3    20    13
LL3 CL2        8    27    30    ANNUAL COSTS ($M) FOR A  0.935 ACCESSION RATIO
LL3 CL1       20    14   144
LL3 CL0       11     7   156                              EPMS FORCE C SAVINGS PERCENT
LL2 CL3        9    34    26   Full Annual Costs          7.18    6.84    0.34    4.67
LL2 CL2        7    46    15   Retirement Cost            0.20    0.20    0.01    3.36
LL2 CL1       15    23    63   Training Cost              0.80    0.47    0.32   40.57
LL2 CL0       28    11   253   Base pay and Propay        3.92    3.95   -0.03   -0.74
LL1 CL1        9    58    16
LL1 CL0       57    58    98
LL0 CL0      107   114    94          Summary Measure of Fit     0.255

1CHGMOS  2MODIFY  3TRAIN  4DRAW  5REPORT  6PRINT  7SAVE  8FETCH  9QUIT
```

Force Competency Model: 5REPORT

APPENDIX I

'SUMMARY AND RECOMMENDATIONS FOR PBCAM'

Summary and Recommendations

- Retirement Cost Estimates Must Be Improved
- Human Capital Model For Guidance In Timing of Training, SRBs, Retirement Provisions
- Interface With AMORE
- Prepare Data Collection For Elasticity Work
- Model Enhancement Task Essential

LIST OF REFERENCES

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